Guidelines for Haz Mat/ WMD Response, Planning and Prevention Training

Guidance for Hazardous Materials Emergency Preparedness (HMEP) Grant Program

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FEMA

Refresher training or competency retesting requirements vary for each of the response levels. In general, refresher training should include critical skills practice, technical information updates, and refinement of incident scene coordination through field exercises simulating emergencies. At a minimum, competency should be demonstrated in all refresher training for the skills directly affecting the safety of responding personnel. Minimum hours for annual refresher training for response personnel are not specified in OSHA 1910.120(q). However, in practice, many jurisdictions use the 8-hour minimum refresher training requirement for site workers in OSHA 1910.120(e) as a guide.

In each of the competency sections of the Response Guidelines, unique areas of emphasis for refresher training are noted.

Recommended Instructor Qualifications

OSHA 1910.120(q)(7) states: "Trainers who teach any of the above training subjects shall have satisfactorily completed a training course for teaching the subjects they are expected to teach, such as the courses offered by the U.S. National Fire Academy, or they shall have the training and/or academic credentials and instructional experience necessary to demonstrate competent instructional skills and a good command of the subject matter of the courses they are to teach."

To implement the OSHA regulations and to encourage quality instruction, it is recommended that instructors possess the following:

- Job knowledge-thorough knowledge of the content to be taught; knowledge of how the information, techniques, and principles apply to performing the job; understanding the difficulties and problems that arise on the job; and specific training or education in the subject matter being taught
- Job Experience-actual work experience directly related to the subject matter (have performed that job being taught) and experience in hazardous materials incidents
- Training knowledge-successful completion of an instructor training course that covers the principles of learning, methods and sequencing of instruction, methods of testing and evaluation, preparing performance objectives and lesson plans, training liability (Reference: NFPA 1041), and oral and written communication skills
- Personal qualities-patience and understanding, enjoyment of and respect for students, and flexibility
- Sensitivity to cultural diversity among students

Some States and private organizations certify hazardous materials instructors. Professional organizations, such as NFPA, have established professional standards for instructors (NFPA 1041) that can be used to evaluate instructor training and certification. Employers and trainers should carefully examine the following criteria for certification of hazardous materials instructors.

- What standards have been applied?
- Are potential certified instructors tested in their area of subject matter expertise?
- Are candidates required to demonstrate their skills and knowledge in the classroom setting?
- Are there follow-up evaluations or rectification requirements?
- Are both instructional and technical skills addressed by certification?
- Is hands-on experience in hazardous materials response considered?
- Have the instructors performed the tasks being taught?

General Training Considerations

Introduction

First responders at the awareness level shall be trained to meet all competencies of the awareness level. In addition, first responders at the awareness level shall receive training to meet requirements of the Occupational Safety and Health Administration, local occupational health and safety regulatory agencies, or Environmental Protection Agency, as appropriate for their jurisdictions. Members of any organization that respond or can be expected to respond to a hazardous materials incident must know the requirements of the OSHA 1910.120 and EPA 311 training and emergency response plan.

Definition

First responders at the awareness level are personnel who are likely to witness or discover a hazardous materials emergency or, in the course of their normal duties, may be the first persons on the scene of an emergency involving hazardous materials. First responders at the awareness level are expected to recognize that hazardous materials are present, protect themselves, call for trained personnel, and secure the area. The most important duty of these personnel is to make proper notification to begin the emergency response sequence. The first responders' role at this level should involve no potential for their exposure to the hazards related to an incident.

Audience

Hazardous materials responders at the awareness level may be employed by public- or private-sector organizations, such as fire or emergency medical services, law enforcement, emergency management, public works, public health, utilities, and transportation, as well as volunteer agencies and manufacturers, guard and security services, and contractors.

Methodology Recommendations

The training method can use a combination of lecture and media presentations with individual or small-group exercises at intervals of 30 to 45 minutes. A course can range from 4 to 16 hours in length. The exercises can consist of activities that practice identification and recognition of hazardous materials from scenario descriptions and can use information sources such as the North American Emergency Response Guidebook to establish the presence of the hazardous materials described in the scenarios.

Refresher training should focus on renewing the skill of employees in using information sources to recognize and identify hazardous materials.

Target Training to a Specific Occupational Group

Persons training for the awareness level are a diverse group, including police, fire, EMS, public works, emergency management, and transportation personnel. Although the minimal competencies for all personnel remain the same, whenever possible training should be tailored to meet the needs of specific groups. Trainees from a specific discipline or profession should be asked to respond to scenarios that are relevant to their work. They should play roles that are consistent with their occupational responsibilities. Training managers should recruit and train instructors from a variety of occupations. Training materials should depict awareness in multiple situations. Major changes to the curriculum should not be necessary; in most cases, an instructor simply must be sensitive to the audience and its needs and use realistic scenarios.

SUMMARY: First Responder at Awareness Level

Audience	*Prerequisites*	*Training*	*Refresher*

Very broad. All who may first respond to hazmat incidents.	None.	- No length required; 4-16 hours is common practice.
		- Traditional classroom format.
		- Competencies:
		  - Understanding of hazmat and the role of first responder.
		  - Ability to recognize and identify hazmat.
			Very broad. All who may first respond to hazmat incidents.

Federal Requirements
For First Responder Awareness Training

OSHA establishes the following training requirements for first responders at the awareness level. Length of training and method of testing are not specified, but employers are required to ensure the employees demonstrate competency in the skills defined.

OSHA 29 CFR 1910.120(q)(6)(i)
FIRST RESPONDER AWARENESS LEVEL

First responders at the awareness level are individuals who are likely to witness or discover a hazardous substance release and who have been trained to initiate an emergency response sequence by notifying the authorities of the release. First responders at the awareness level shall have sufficient training or have had sufficient experience to objectively demonstrate competency in the following areas:

- *(A) An understanding of what hazardous substances are, and the risks associated with them in an incident*
- *(B) An understanding of the potential outcomes associated with an emergency created when hazardous substances are present*
- *(C) The ability to recognize the presence of hazardous substances in an emergency*
- *(D) The ability to identify the hazardous substance, if possible*
- *(E) An understanding of the role the first responder awareness individual in the employer's emergency response plan including site security and control and the U.S. Department of Transportation's Emergency Response Guidebook*
- *(F) The ability to realize the need for additional resources, and to make appropriate notifications to the communications center.*

Required Training can be translated directly into the following six sample principal objectives.

Identification	*Sample **Required** Training Objectives*
OSHA AWARE-A	Define the different types of hazardous substances and identify the risks associated with them in an incident.
OSHA AWARE-B	Given a simulated incident involving hazardous materials, identify the potential outcomes.
OSHA AWARE-C	Given the data available during an incident response, demonstrate recognition of the presence of hazardous substances.
OSHA AWARE-D	Given the data available during an incident response, identify hazardous substances present.
OSHA AWARE-E	Define the role of the first responder awareness individual in the employer's emergency response plan including site security and control and the DOT Emergency Response Guidebook.
OSHA AWARE-F	Given a simulated incident, determine the need for additional resources, and make appropriate notifications to the communication center.

General Training Considerations

Introduction

First responders at the operations level shall be trained to meet all requirements at the awareness and operational levels. In addition, first responders at the operations level shall receive training to meet requirements of OSHA, local occupational health and safety regulatory agencies, or EPA, as appropriate for their jurisdiction. (Source: NFPA 472)

Definition

First responders at the operations level are those persons who respond to releases or potential releases of hazardous materials as part of the initial response to the incident for the purpose of protecting nearby persons, the environment, or property from the effects of the release. They shall be trained to respond in a defensive fashion, to control the release from a safe distance and keep it from spreading. (Source: NFPA 472)

Audience

First responders at the operations level are typically those persons who are the first to arrive at the scene of a hazardous materials incident. They may be employed by law enforcement, public service, fire or emergency services, or a variety of private organizations. Generally, they are not members of a hazardous materials response team.

Methodology

First responder operations training is best conducted in a classroom environment, with opportunities for small- and large-group exercises either in the classroom or as a field exercise in conjunction with the training. Training ranges from 8 to 40 hours, and longer courses often include awareness training with the operations program. Lectures with small-group student activities are appropriate for much of the material. However, incident scene organization and command drill and practice will require large-group simulated incidents that can be best conducted in a simulator or as a field exercise.

Refresher training should include (1) competency retesting of all response skills, (2) technical information updates, and (3) critique of incident scene decision-making using simulated emergencies.

SUMMARY: First Responder at the Operations Level

OSHA minimum requirement = Awareness + 8 hours Operations training (24 hours operations training is required as a prerequisite to technician and/or incident commander training)

Audience	Prerequisites	Training	Refresher
Broad. All who may participate in initial operations at a hazmat incident.	First Responder Awareness training.	- 8-40 hours (minimum 8 required). - Classroom and simulator/field instruction. - Competencies: -Understanding of hazmat terms, basic hazard and risk assessment, and role of first responder at operational level. - Ability to perform basic control, containment and/or confinement techniques with proper use or personal protective equipment and following standard operating procedure. - Ability to implement basic decontamination procedures.	1. Competency retesting of all response skills. 2. Technical information updates. 3. Incident scene decision-making using simulated emergencies.

Federal Requirements

For First Responder Operations Training

OSHA establishes the following training requirements for first responders at the operations level: a minimum of 8 hours of training beyond the awareness level or, as an alternative, certification of sufficient experience. Training in excess of 8 hours may be necessary, especially for additional skills and knowledge such as for flammable gas firefighting. Employers are required to ensure that employees demonstrate competency in the skills defined.

OSHA 29 CFR 1910.120(q)(6)(ii)
FIRST RESPONDER OPERATIONS LEVEL

First responders at the operations level are individuals who respond to releases or potential releases of hazardous substances as part of the initial response to the site for the purpose of protecting nearby persons, property, or the environment from the effects of the release. They are trained to respond in a defensive fashion without actually trying to stop the release. Their function is to contain the release from a safe distance, keep it from spreading, and prevent exposures. First responders at the operational level shall have received at least 8 hours of training or have had sufficient experience to objectively demonstrate competency in the following areas, in addition to those listed for the awareness level and the employer shall so certify:

- *(A) Knowledge of the basic hazard and risk assessment techniques*
- *(B) Know how to select and use proper personal protective equipment provided to the first responder operational level*
- *(C) An understanding of basic hazardous materials terms*
- *(D) Know how to perform basic control, containment and/or confinement operations within the capabilities of the resources and personal protective equipment available with their unit*
- *(E) Know how to implement basic decontamination procedures*
- *(F) An understanding of the relevant standard operating procedures and termination procedures*

Required Training can be translated into the following six sample principal objectives.

Identification	*Sample **Required** Training Objectives*
OSHA OPS-A	Given a simulated incident involving hazardous materials, demonstrate knowledge of basic hazard and risk assessment techniques.
OSHA OPS-B	Given a simulated incident involving hazardous materials, select and demonstrate correct use of proper personal protective equipment.
OSHA OPS-C	Define basic hazardous materials terms.
OSHA OPS-D	Given a simulated incident involving hazardous materials, describe basic control, containment, and/or confinement operations within the capabilities of the resources and personal protective equipment available within the student's unit.
OSHA OPS-E	Given a simulated incident involving hazardous materials, list and define appropriate basic decontamination procedures.
OSHA OPS-F	Given a simulated incident involving hazardous materials, identify relevant SOP's and termination procedures.

General Training Considerations

Introduction

Hazardous materials technicians shall be trained to meet all requirements of the first responder at the awareness and operations level and the technician level of emergency hazardous materials response. In addition, technicians shall meet the training requirements and be provided medical surveillance in accordance with requirements of OSHA, local occupational health and safety regulatory agencies, or EPA, as appropriate for their jurisdiction.

Definition

Technicians are those persons who respond to releases or potential releases of hazardous materials for the purpose of controlling the release. They are more aggressive than first responders at the operations level in that they will approach the point of release to plug, patch, or otherwise stop the release of a hazardous materials substance. They are expected to use specialized chemical protective clothing and specialized control equipment.

Audience

Technicians typically are members of hazardous materials response teams, which consist of specifically trained personnel who respond to hazardous materials incidents. The teams perform various response actions including assessment, firefighting, rescue, and containment; they are *not* responsible for cleanup operations following the incidents. Technicians are employed by various public and private organizations including fire or emergency medical services, law enforcement, public health, utilities, manufacturers, and contractors. By definition, technicians must be well versed in a wide variety of topics. They are expected to respond to most kinds of hazardous materials incidents that would occur in their jurisdictions. Therefore, training managers should be careful not to make this broad-based training too specialized. A community's analysis may suggest modifications. Emphasis should be placed on the most prevalent types of chemicals and incidents.

Equipment, Facilities, and Resources

Hazardous materials technician training requires both classroom and hands-on workspace as well as reference materials, equipment, and props. Consideration must be given to class size, weather conditions, number of instructors or evaluators, and available equipment and props. Because of the time involved in demonstration and performance activities, class size must be limited. A reasonable student-to-teacher ratio is 30:1 for lecture and 10:1 for hands-on activities, although some blocks of instruction (such as work with live chemicals) may require a 5:1 ratio. Extreme cold or heat will affect outdoor activities involving protective clothing, chemicals, and props. If outdoor exercises involving chemical protective clothing or actual chemicals are to be conducted, neighboring residences and facilities must be considered and notified. Arrangements for secured storage must be made to handle the expensive equipment that will have to be located near the classroom and work area.

Methodology Recommendation

Hazardous materials technician training is best conducted with a combination of classroom instruction using traditional lecture and small-group activities, field exercises involving group practice in simulated emergencies, and hands-on skill training in doing actual control, confinement, and containment exercises. Typically, training ranges from 40 to 240 hours, and longer courses often include awareness and operations training. There should be a strong emphasis on hands-on practice and incident decision-making. Content instruction should be synthesized in student activities requiring analysis of incident information to determine plans of action. Skill training should be performed on actual containers with simulated releases, using full protective equipment and proper response tools. Skill training should include instructor modeling, student walk-throughs, and student practice under stress until competency is achieved. Proper critiques and corrective instruction are essential. Refresher training should include (1) competency retesting of all response skills, (2) technical information updates, and (3) critique of incident scene decision-making using simulated emergencies

Federal Requirements

For Hazardous Materials Technician Training

OSHA establishes the following training requirements for hazardous materials technicians. Methods of testing are not specified. Technicians shall have awareness training and operations training (for a minimum of 24 hours) and training at the technician level. Employers are required to ensure that employees demonstrate competency in the skills defined.

OSHA CFR 1910.120 (q)(6)(iii)
HAZARDOUS MATERIALS TECHNICIAN

Hazardous materials technicians are individuals who respond to releases or potential releases for the purpose of stopping the release. They assume a more aggressive role than a first responder at the operations level in that they will approach the point of release in order to plug, patch, or otherwise stop the release of a hazardous substance. Hazardous materials technicians shall have received at least 24 hours of training equal to the first responder operations level and in addition have competency in the following area and the employer shall so certify:

- *(A) Know how to implement the employer's emergency response plan*
- *(B) Know the classification, identification and verification of known and unknown materials by using field survey instruments and equipment*
- *(C) Be able to function within an assigned role in the Incident Command System*
- *(D) Know how to select and use proper specialized chemical personal protective equipment provided to the hazardous materials technician*
- *(E) Understand hazard and risk assessment techniques*
- *(F) Be able to perform advance control, containment, and/or confinement operations within the capabilities of the resources and personal protective equipment available with the unit*
- *(G) Understand and implement decontamination procedures*
- *(H) Understand termination procedures*
- *(I) Understand basic chemical and toxicological terminology and behavior*

OSHA 29 CFR 1910.120(q)(10)

(10) Chemical protective clothing. Chemical protective clothing and equipment to be used by organized and designated HAZMAT team members, or to be used by hazardous materials specialists, shall meet the requirements of paragraphs (g)(3) through (5) of this section.

Required Training is specified in the OSHA regulations listed above. For the convenience of course assessment, the requirements are translated directly into the following nine sample principal objectives.

Identification	*Sample **Required** Training Objectives*
OSHA TECH-A	Given a simulated incident involving hazardous materials, demonstrate implementation of the employer's emergency response plan.
OSHA TECH-B	Using field survey instruments and equipment, classify, identify, and verify known and unknown hazardous materials.
OSHA TECH-C	Given a simulated incident involving hazardous materials, demonstrate functioning within an assigned role in the incident command system.

Required Training

OSHA TECH-D	Given a simulated incident involving hazardous materials, select and demonstrate use of proper specialized chemical personal protective equipment provided to the hazardous materials technician.
OSHA TECH-E	Identify hazard and risk assessment techniques.
OSHA TECH-F	Given simulated incidents involving different hazardous materials containers and releases, demonstrate advanced control, containment, and/or confinement operations.
OSHA TECH-G	Given a simulated incident involving hazardous materials, identify and demonstrate decontamination procedures.
OSHA TECH-H	List and describe hazardous materials incident termination procedures.
OSHA TECH-I	Define basic chemical and toxicological terms and describe basic chemical and toxicological behavior.

SUMMARY: Hazardous Materials Technician

OSHA minimum requirement=24 hours Operations training + Technician training

Audience	Prerequisites	Training	Refresher
Narrow. Prospective hazardous materials team members and others who are designated in response plans as a general resource to perform advanced defensive/ offensive operations at all anticipated hazardous materials emergencies.	1. First Responder Awareness training. 2. First Responder Operations training (min. 24 hours required).	- 40-240 hours. - Classroom and simulator/field instruction, with emphasis on hands-on training. - Competencies: - Knowledge of role of technician within incident command system and responsibilities within employer's emergency response plan. - Knowledge of hazardous materials terminology, behavior, and ability to perform advanced hazard and risk assessment using field survey instruments and equipment. - Ability to perform advanced control, containment and/or confinement techniques. - Ability to select and use specialized personal protective equipment. - Ability to implement decontamination procedures. - Knowledge of termination procedures.	1. Competency retesting of all response skills. 2. Technical information updates. 3. Incident scene decision-making using simulated emergencies.

General Training Considerations

Introduction

In title 29 of the Code of Federal Regulations, 1910. 120 (q)(6)(v), OSHA sets the minimum level of training and competencies required for incident commanders. Incident commanders who will assume control of the incident scene beyond the first responder at the awareness level shall receive at least 24 hours of training equal to the first responder at the operations level as well as training to the competencies defined in this section. The U.S. Environmental Protection Agency, individual States, and local agencies may require that incident commanders have additional training or competencies, such as those competencies defined in 29 CFR 1910.120(q)(3).

Definition

The incident commander is the person responsible for all decisions relating to the management of an incident and is in charge of the incident site. This is the equivalent to the on-scene incident commander as defined by OSHA 1910,120.

Audience

Incident commanders may be employed by public emergency response or private agencies that may respond to hazardous materials incidents. They are typically employees of law enforcement agencies, fire departments, emergency medical responders, emergency management agencies, public works departments, or any other agencies that may be expected to take the lead responsibility at a hazardous material incident.

Methodology Recommendations

Hazardous materials incident commander training should include a combination of traditional classroom lecture with small-group activities and large group field exercises. Training can range from 16 to 40 hours in length. Small-group classroom activities focusing on using the incident command system should be progressive in terms of incident complexity and resource management complexity. Table-top, field exercises, or large group incident scene simulations are optimal for overall command structure practice to develop effective incident management skills. For proper skill development during scenario practice, it is essential that there be proper critiques and corrective instructions of incident resource organization, style, and choice of delegation of command responsibilities, management of communication systems, and transfer of command. Testing and evaluation consist of a written examination and post-incident critique of simulations, including solutions to small-group activities and field exercises. Refresher training should include review of command structure SOP's, technical updates on State and federal response plans, and field exercise practice performing command roles in simulated emergencies.

SUMMARY: Incident Commander

OSHA requirement=24 hours Operations training + Incident Commander training

Audience	Prerequisites	Training	Refresher
Moderate in size. Responders whose level of command responsibility may include incident commander at all phases of a hazmat incident, from initial response through stabilization to incident termination.	1. First Responder Awareness training. 2. First Responder Operations training (min. 24 hours required).	- 16-40 hours. - Classroom and simulator/field instruction, with emphasis on incident management and resource coordination. - Competencies: - Knowledge of role of incident commander within incident command system and responsibilities within employer's emergency response plan. - Knowledge of State and federal emergency response plans. - Ability to manage and coordinate a hazmat incident response, including supervising hazard and risk assessment, coordinating control, containment and confinement operations, ensuring proper use of personal protective equipment, employing proper notification procedures, and ensuring correct decontamination procedures. - Ability to implement transfer of command and incident termination procedures.	1. Review of command structure SOP's. 2. Information updates on State and federal response plans. 3. Refresher practice incident scene management, coordination and decision-making using simulated emergencies.

Federal Requirements

For Incident Commander Training

OSHA establishes the following training requirements for incident commanders: a minimum of 24 hours of training at the first responder operations level plus training to the competencies described below or certification of sufficient experience as an alternative. Employers are required to ensure that employees demonstrate competency in the skills defined.

OSHA 29 CFR 1910.120(q)(6)(v)
ON-SCENE INCIDENT COMMANDER

Incident commanders, who will assume control of the incident scene beyond the first responder awareness level, shall receive at least 24 hours training equal to the first responder operations level and in addition have competency in the following areas and the employer shall so certify.

- *(A) Know and be able to implement the employers incident command system*
- *(B) Know how to implement the employers emergency response plan*
- *(C) Know and understand the hazards and risks associated with employees working in chemical protective clothing*
- *(D) Know how to implement the local emergency response plan*
- *(E) Know of the state emergency response plan and of the Federal Regional Response Team*
- *(F) Know and understand the importance of decontamination procedures*

The following are additional OSHA requirements that must be reflected in the development of training objectives.

OSHA 29 CFR 1910.120(q)(3)(i-ix)

(i) The senior emergency response official responding to an emergency shall become the individual in charge of a site-specific Incident Command System (ICS). All emergency responders and their communications shall be coordinated and controlled through the individual in charge of the ICS assisted by the senior official present for each employer.

Note to (q)(3)(i)- The "senior official" at an emergency response is the most senior official on the site who has the responsibility for controlling the operations at the site. Initially it is the senior officer on the first- due piece of responding emergency apparatus to arrive on the incident scene. As more senior officials arrive (i.e., battalion chief, fire chief, State law enforcement official, state coordinator, etc.) the position is passed up the line of authority which has been previously established.

(ii) The individual in charge of the ICS shall identify, to the extent possible, all hazardous substances or conditions present and shall address as appropriate site analysis, use of engineering controls, maximum exposure limits, hazardous substance handling procedures, and use of any new technologies.

(iii) Based on the hazardous substances and/or conditions present, the individual in charge of the ICS shall implement appropriate emergency operations., and assure that the personal protective equipment worn is appropriate for the hazards to be encountered. However, personal protective equipment shall meet, at a minimum, the criteria contained in 29 CFR 1910.156(e) when worn while performing fire fighting operations beyond the incipient stage for any incident.

(iv) Employees engaged in emergency response and exposed to hazardous substances presenting an inhalation hazard or potential inhalation hazard shall wear positive pressure self-contained breathing apparatus while engaged in the emergency response, until such time that the individual in charge of the ICS determines through the use of air monitoring that a decreased level of respiratory protection will not result in hazardous exposures to employees.

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(v) The individual in charge of the ICS shall limit the number of emergency response personnel at the emergency site, in those areas of potential or actual exposure to the incident or site hazards, to those who are actively performing emergency operations. However, operations in hazardous areas shall be performed using the buddy system in groups of two or more.

(vi) Back-up personnel shall stand by with equipment ready to provide assistance or rescue. Qualified basic life support personnel, as a minimum, shall also be standing by with medical equipment and transportation capability.

(vii) The individual in charge of the ICS shall designate a safety officer, who is knowledgeable in the operations being implemented at the emergency response site, with specific responsibility to identify and evaluate hazards and to provide direction with respect to the safety of operations for the emergency at hand.

(viii) When activities are judged by the safety officer to be an IDLH and/or involve an imminent danger condition, the safety officer shall have the authority to alter, suspend, or terminate those activities. The safety official shall immediately inform the individual in charge of the ICS of any action needed to be taken to correct these hazards at the emergency scene.

(ix) After emergency operations have terminated, the individual in charge of the ICS shall implement appropriate decontamination procedures.

See also OSHA 29 CFR 1910.120 Appendix C, Compliance Guidelines (6) in ICS and (7*)* Site Safety and Control Plans.

The safety and security of response personnel and others in the area of an emergency response incident site should be of primary concern of the incident commander. The use of a site safety and control plan could greatly assist those in charge of assuring the safety and health of employees on the site.

A comprehensive site safety and control plan should include the following: summary analysis of hazards on the site and risk analysis of those hazards; site map or sketch; site work zones (clean zone transition or decontamination zone, work or hot zone); use of the buddy system; site communications; command post or command center; standard operating procedures and safe work practices; medical assistance and triage area; hazard monitoring plan (air contamination monitoring, etc.); decontamination procedures and area; and other relevant areas. This plan should be part of the employer's emergency response plan or an extension of it to the specific site.

Required Training can be translated directly into the following six sample objectives:

Identification	*Sample **Required** Training Objectives*
OSHA I.C.-A	Given a simulated incident involving hazardous materials, demonstrate implementation of the employer's incident command system.
OSHA I.C.-A.1	Demonstrate establishing command, organizing resources and assigning subordinate units and personnel, and establishing lines of communication.- OSHA 29 CFR 1910.120(q)(3)(i)
OSHA I.C.-A.2	Demonstrate transfer of command.- Note to OSHA 29 CFR 1910.120(q)(3)(i)
OSHA I.C.-A.3	Define the roles and responsibilities of the safety officer.- OSHA 29 CFR 1910.120 (q)(3)(vii and viii)
OSHA I.C.-B	Given a simulated incident involving hazardous materials, demonstrate implementation of the employer's emergency response plan.
OSHA I.C.-B.1	Identify all hazardous substances or conditions present and describe as appropriate site analysis, use of engineering controls, maximum exposure limits, hazardous substance handling procedures, and use of any new technologies. OSHA 29 CFR 1910.120(q)(3)(ii)
OSHA I.C.-B.2	Determine and describe appropriate emergency operations, including correct use of personal protective equipment, based on the hazardous substance and/or conditions present. OSHA 29 CFR 1910.120(q)(3)(iii)
OSHA I.C.-C	Given a simulated incident involving hazardous materials, identify the hazards and risks associated with employees working in chemical protective clothing.
OSHA I.C.-C.1	Identify the process to determine, through the use of air monitoring, when it is safe for subordinate personnel to discontinue use of positive pressure self-contained breathing apparatus. OSHA 29 CFR 1910.120(q)(3)(iv)
OSHA I.C.-C.2	Identify strategies and tactics to minimize the number of emergency response personnel working in areas of potential or actual exposure to incident or site hazards, while using the buddy system in groups of two or more. OSHA 29 CFR 1910.120(q)(3)(v)
OSHA I.C.-C.3	Identify requirements for backup assistance and rescue personnel and qualified basic life support personnel, equipment, and transportation capability. OSHA 29 CFR 1910.120(q)(3)(vi)
OSHA I.C.-D	Given a simulated incident involving hazardous materials, demonstrate implementation of the local emergency response plan.
OSHA I.C.-E	Identify and describe the State emergency response plan and the federal regional response team.
OSHA I.C.-F	Given a simulated incident involving hazardous materials, identify and demonstrate management of decontamination procedures.

General Training Considerations

Introduction

Emergency medical service (EMS) personnel at EMS/HM Level 1, in addition to their BLS or ALS certificatino, shall be trained to meet the requirements of the first responder at the awareness level, as defined in OSHA 1910.120(q)(6)(i) andor as defined in NFPA 472, Chapter 4, and all the competencies recommended in this section. In addition, EMS/HM Level 1 responders shall meet the training requirements of local occupational health and safety regulatory agencies or EPA, as appropriate for their jurisdiction.

In addition to being trained to the first responder awareness level, emergency medical service personnel who respond to hazardous materials incidents should be trained and receive regular continuing education to maintain competence in three areas: emergency medical technology, hazardous materials, and specialized topics such as hazardous materials toxicology, as approved by the authority having jurisdiction. The training program should be a comprehensive competency-based presentation of the required subject material with applicable hands-on sessions that demonstrate the newly acquired skills.

Definition

Emergency medical service/hazardous materials Level 1 responders are persons who, in the course of their normal duties, may be called on to perform patient care activities in the cold zone at a hazardous materials incident. EMS/HM Level 1 responders shall provide prehospital care *only* to those individuals who no longer pose a significant risk of secondary contamination, such as decontaminated patients in the cold zone.

Audience

EMS/HM Level 1 training is appropriate for all emergency medical technicians, paramedics, and other health professionals who, in the course of their normal duties, may respond to hazardous materials emergencies either as a first responder or as on-site cold zone support to the incident command structure at an incident scene.

Related Health, Safety, and Performance Standards

OSHA 29 CFR 1910.120
EPA 40 CFR 311
NFPA 472
NFPA 473
NFPA 1561 Standards on Fire Department Incident Management System, 1995 Edition
U.S. Fire Administration Emergency Incident Rehabilitation Guide, FA-114

Recognized U.S. Department of Transportation, State, regional, or local training curricula should constitute the entry-level EMS preparation for continuing hazardous materials training. When a hazardous materials incident occurs, all EMS basic life-support-provider personnel responding should have been trained to the emergency medical technician A level or equivalent.

Appropriate Methodologies

EMS/HM Level 1 Responder training should include a combination of traditional classroom lecture with small-group activities, field exercises involving working with the incident command structure in simulated emergencies, and hands-on psychomotor skill training. Content instruction should focus on contamination hazards, treatment procedures, and incident scene roles and responsibilities. Trainee activities should focus on assessment and analysis of hazards and determination of appropriate procedures. Skill training should focus on implementing procedures. Written and practical examinations are highly recommended to measure achievement in initial training and refresher programs and to support the employer's responsibility that all EMS personnel are trained to competency before being called on to perform at emergencies. Tabletop and field exercises should focus on acting out incident scene roles and on implementing procedures in a field environment. Refresher training should be conducted on a yearly basis and focus on technical updates

to changes in response protocols, SOP's, and renewal of individual response skills.
The following resources are recommended to supplement the training process:

Local Emergency Response Plan
Standard Operating Procedures
Hawley's Condensed Chemical Dictionary, 11th Edition
OSHA 29 CFR 1910.120
Hazardous Chemical Data (U.S. Government)
National Institute for Occupational Safety and Health (NIOSH) Pocket Guide to Chemical Hazards (U.S. Government)
Emergency Action Guides (Association of American Railroads)
NFPA 471, 472, and 473
Handbook of Toxic and Hazardous Chemicals and Carcinogens
Toxic Gases: First Aid and Medical Treatment
Haz/Mat Injuries (Bradford/Stutz)

SUMMARY: Emergency Medical Services/Haz Mat Level 1 Responder

Audience	Prerequisites	Training	Refresher
Large training audience. All paramedics and emergency medical technicians who respond to emergencies, including all transportation accidents, that may involve hazmat.	First Responder Awareness training. BLS or ALS certification	- Classroom, physical skills lab, and simulator/field instruction, with emphasis on decision making and treatment. - Competencies: - Assessing incident scene hazards and risks of patient secondary contamination. - Incident scene response planning, including determining personal protective equipment needs and defining roles and responsibilities of EMS Level 1 responder. - Ability to perform EMS/HM Level 1 patient preparation, care, preparation for transport, and patient transport as appropriate. -Ability to perform medical support of HM incident response personnel. - Ability to perform post-incident EMS reporting, documentation, and follow-up.	1. Technical updates. 2. Changes in response protocols and incident command system SOP's. 3. Renewal and retesting of incident scene decision making and cold zone treatment skills.

General Training Considerations

Introduction

Emergency medical service hazardous materials Level 2 responders shall be certified at the EMT-B level or higher, shall meet all the competencies for EMS/Haz Mat Level 1 responder as defined in NFPA 473 and in these guidelines, and shall meet all the competencies recommended in NFPA 473 and in this section for EMS/HM Level 2 Responder. In addition, EMS/HM Level 2 responders shall meet the training requirements of local occupational health and safety agencies, OSHA, and EPA, and emergency medical technician A certification standards, as appropriate for or required by their jurisdiction.

Decontamination of patients or rescue personnel is a critical task. These individuals have come in contact with a foreign agent that will cause either short- or long-term medical problems. Whether the ramifications of contact with the foreign agent are long-term, chronic or acute, the need to have medically trained personnel, emergency medical technicians, and paramedics conducting decontamination procedures is imperative and self-explanatory. Using certified emergency medical technicians and paramedics trained in hazardous materials to conduct the decontamination operation will result in a higher level of care and the ability to provide effective and efficient patient assessment and prehospital care that will benefit all who are involved with these types of operations.

EMS/HM Level 2 Responders are expected to be able to analyze and determine the magnitude of problem areas at hazardous materials incidents and at criminal and terrorist incidents involving hazardous materials or related weapons of mass destruction. They also are expected to plan a response and provide the appropriate level of emergency medical care and decontamination to persons involved in such incidents, provide medical support to hazardous materials response personnel, and implement and terminate the response.

Definition

EMS/HM Level 2 Responders are persons who, in the course of their normal activities, may be called on to perform patient care and decontamination activities in the warm zone (the area where personnel and equipment decontamination and hot zone support take place) at hazardous materials incidents or at criminal and terrorist incidents involving hazardous materials or related weapons of mass destruction. EMS/HM Level 2 Responders are called on to provide care to individuals who still pose a significant risk of secondary contamination. In addition, personnel at this level shall be able to coordinate EMS activities at a hazardous materials incident and provide medical support to and decontamination of hazardous materials response personnel.

Audience

EMS/HM Level 2 Responders may be public-sector or private-sector individuals charged with the responsibility of providing and coordinating EMS services at the scene of a hazardous materials incident or at the scene of a criminal or terrorist incident involving hazardous materials or related weapons of mass destruction. They include selected emergency medical technicians and paramedics as well as members of industrial fire brigades who are assigned patient care responsibility at such incidents on-site or off-site.

Related Health, Safety, and Performance Standards

OSHA 29 CFR 1910.120
EPA 40 CFR 311
NFPA 472
NFPA 473
NFPA 1561 Standard on Fire Department Incident Management System
U.S. Fire Administration Emergency Incident Rehabilitation Guide, FA-114

Recognized DOT, State, regional, or local training curricula should constitute the entry-level EMS preparation for continuing hazardous materials training. When a hazardous materials incident or a hazardous

materials-related criminal or terrorist occurs, all EMS basic life-support-provider personnel responding should have been trained to the emergency medical technician B level or equivalent.

Appropriate Methodologies

EMS/HM Level 2 Responder training should include a combination of traditional classroom lecture with small-group activities, field exercises involving working with the incident command structure in simulated emergencies, and hands-on psychomotor skill training. Content instruction should focus on contamination hazards, decontamination procedures, health monitoring treatment procedures, and incident scene roles and responsibilities. Trainee activities should focus on assessment and analysis of hazards and determination of appropriate procedures. Skill training should focus on implementing decontamination and patient care procedures and the use of appropriate personal protective equipment. Written and practical examinations are highly recommended to measure achievement in initial training and refresher programs and to support the employer's responsibility that all EMS/HM Level 2 Responder personnel be trained to competency before being called on to perform EMS/HM Level 2 functions at emergencies. Table-top and field exercises should focus on acting out incident scene roles and on implementing procedures in a field environment. Refresher training should be conducted on a yearly basis and should focus on technical updates, updates on changes in response protocols and SOP's, and renewal of individual skills in decontamination, patient treatment, and use of personal protective equipment.

SUMMARY: Emergency Medical Services/Hazardous Materials Level 2 Responder

Audience	Prerequisites	Training	Refresher
Moderate size audience. Paramedics and emergency medical technicians who may be called upon to conduct decontamination and patient care in the warm and hot zone of a haz mat incident or a haz mat-related criminal or terrorist incident scene.	1. First Responder Awareness training. 2. EMS/HM Level 1 Responder training. 3. EMT-B certification	- Classroom, physical skills lab, and simulator/field instruction, with emphasis on decision making and treatment skills. - Competencies: - Assessing incident scene hazards and risks of patient secondary contamination. - Incident scene response planning, including determining personal protective equipment needs and defining roles and responsibilities of the EMS/HM Level 2 responder. - Ability to perform EMS/HM Level 2 patient decontamination and treatment in the warm zone at an incident scene. - Ability to perform post-incident EMS reporting, documentation, and follow-up.	1. Technical updates. 2. Changes in response protocols and incident command system SOP's. 3. Renewal and retesting of incident scene decision making and warm zone decontamination and treatment skills.

Introduction

Hospital Emergency Department Personnel face a difficult task when dealing with contaminated patients. Contaminated patients may arrive at the hospital by their own means or be transported by Emergency Medical Services providers when field decontamination is impractical. It is essential that all emergency departments have the capability to recognize, assess, and begin the treatment of hazardous material patients, including those who are contaminated with a hazardous substance. Furthermore, the hospital emergency department must assure the protection of their own medical staff and the continued well being of hospital residents. The hospital is an integral emergency responder when dealing with a chemical emergency or disaster and training programs must address the unique and valuable role played by the communities acute residential care system.

At a minimum, hospital personnel must be able to analyze the situation, assess patient conditions and problems, take the necessary steps to assure medical provider safety, attempt identification of the offending chemical substance, and initiate the decontamination and medical care process.

Definition

Hospital emergency department personnel are persons who, in the course of their normal work activities, may be called upon to perform patient care and decontamination within the confines of the hospital. These personnel in the performance of their duties may be exposed to a significant risk of secondary contamination from the patients for which they are charged to provide care. In addition these personnel may be called upon to assist pre-hospital personnel requiring technical assistance in the area of patient decontamination.

Audience

Hospital emergency department personnel may be public or private-sector individuals charged with the responsibility of coordinating and providing medical treatment of patients who have been exposed to or contaminated by hazardous materials. They include selected emergency department staff including physicians, nurses at all levels, aids, support staff as well as any other individual assigned to care for patients received from a hazardous materials emergency on or off site.

Related Health, Safety, and Performance Standards

OSHA 29 CFR 1910.120
OSHA 29 CFR 1910.134
OSHA 29 CFR 1910.1030
EPA 40 CFR 311
Joint Commission for the Accreditation of Healthcare Organizations (JCAHO)

Recognized DOT, State, regional, or local training curricula should be a basis for hospital personnel preparation and continuing hazardous materials training and education. The Joint Commission for the Accreditation of Healthcare Organizations has requirements which hospitals must meet to receive accreditation.

Hospital accreditation in most states is a necessary requirement for the facility to receive a hospital license and insurance reimbursements. The JCAHO requirements relating to hazardous materials and hospital community planning are reflected in the following training objectives.

Appropriate Methodologies

Hospital Emergency Department personnel training should include a combination of traditional classroom lecture with small-group activities, field exercises involving working in simulated emergencies, and hands-on psychomotor skill training. Content instruction should focus on contamination hazard, decontamination procedures, patient flow within the hospital, health treatment procedures and roles and responsibilities. Trainee activities should focus on assessment and analysis of hazards and determination of appropriate procedures. Skill training should focus on implementing decontamination and patient care procedures, use of reference materials and the use of appropriate personal protective equipment. Written and practical examinations are highly recommended to measure achievement in initial training and refresher programs and to support the employer's responsibility that all emergency department personnel be trained to competency before being called upon to perform at emergencies. Exercises should focus on acting out the assigned roles and on implementing procedures in the hospital environment. Refresher training should be conducted on a yearly basis and should focus on technical updates, updates on changes in hospital protocol and procedures, and renewal of individual skills in decontamination, patient treatment, and use of personnel ṗrotective equipment.

SUMMARY:Hospital Personnel

Audience	Prerequisites	Training	Refresher
Moderate in size. Hospital emergency department personnel who may coordinate or provide treatment to patients who have been exposed to or contaminated by hazardous materials.	None, beyond professional competencies associated with role in hospital emergency department.	- Classroom, lab instruction with simulated emergencies, hands-on psychomotor skill training. - Competencies: - Knowledge of contamination hazards, decontamination procedures, patient flow, health treatment procedures, roles and responsibilities. - Ability to implement decontamination, use of reference materials, and use of personal protective equipment.	1. Technical updates. 2. Updates on changes in hospital protocols and procedures. 3. Renewal of skills in decontamination, patient treatment, and use of personal protective equipment.